Chapter 13

Maintain and Replace the Routing Engine

This chapter discusses the following topics about maintaining and replacing Routing Engine components:

Tools and Parts Required

You need the following the tools and parts to replace Packet Forwarding Engine components:

Phillips (+) screwdriver, number 2

An electrostatic bag for the Routing Engine after it is removed

Antistatic mat, placed on a flat, stable surface

Electrostatic discharge (ESD) grounding wrist strap

Maintain the Routing Engine

To maintain the Routing Engine, follow these guidelines:

Check the status of the Routing Engine by entering the following command-line interface (CLI) command:

```
user@host> show chassis routing-engine
```

For more information about using the CLI, see the JUNOS Internet software manuals.

If you need a new PC card, you must use a Sandisk 110-MB PCMCIA PC card (part number SDP3BI-110-101).

Replace the Routing Engine

To replace the Routing Engine, follow these procedures:

Remove the Routing Engine on page 142

Install the Routing Engine on page 143

Verify That the Routing Engine Is Installed Correctly on page 144

The Routing Engine is field-replaceable, but is not hot-removable or hot-pluggable. You must power down the router to remove or replace the Routing Engine.

Remove the Routing Engine

The Routing Engine is located at the rear of the chassis above the power supplies. It weighs approximately 1.5 lb (0.7 kg).

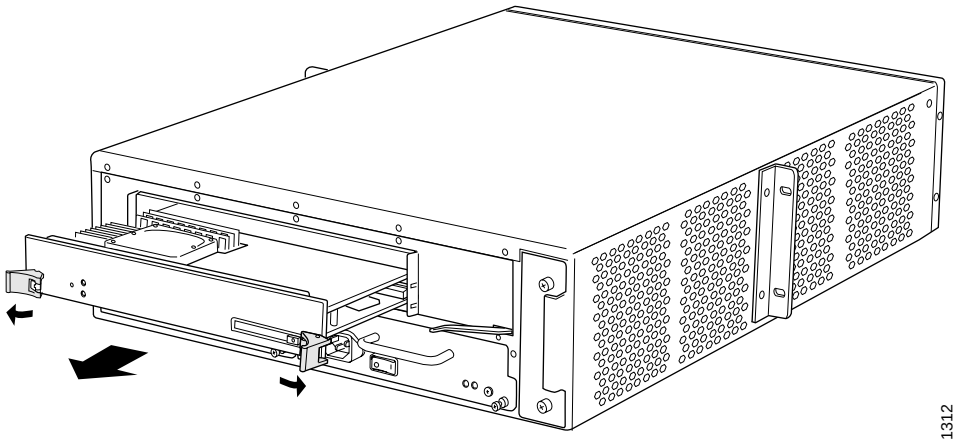
To remove the Routing Engine, follow this procedure (see Figure 46):

1. Attach an ESD wrist strap to your bare wrist and connect the wrist strap to one of the two ESD points on the chassis.
2. If the router is operational, power down the router before removing the Routing Engine. See “Power Down the Router” on page 118 for information on powering down the router.
3. Unscrew the five screws holding the rear cover in place, and remove the cover. Be sure to save the screws for when you reinstall the cover.
4. Unscrew the screws on the outside edges of the extractor clips to unseat the Routing Engine from the FEB.
5. Press in on the red tabs on the extractor clips, then flip the ends of the extractor clips toward the outside edges of the router to release the Routing Engine.
6. Grasp both sides of the Routing Engine and slide the it about three quarters of the way out of the router.

Slide the Routing Engine out of the slot evenly. If you pull on one side faster than the other, the unit might get lodged on the guides and become damaged.

7. Move one of your hands underneath the housing to support it, and slide the Routing Engine completely out of the chassis.

Figure 46: Remove the Routing Engine



Install the Routing Engine

To install the Routing Engine in the rear of the chassis above the power supplies, follow this procedure (see Figure 47):

1. Attach an ESD wrist strap to your bare wrist and connect the wrist strap to one of the two ESD points on the chassis.

2. Move one of your hands underneath the Routing Engine to support it and align the rear of the unit with the guides inside the chassis.

3. Slide the Routing Engine all the way into the chassis until it contacts the connectors on the FEB.

> **Caution** Slide the Routing Engine into the slot evenly. If you push in one side faster than the other, the unit might get lodged on the guides and become damaged.

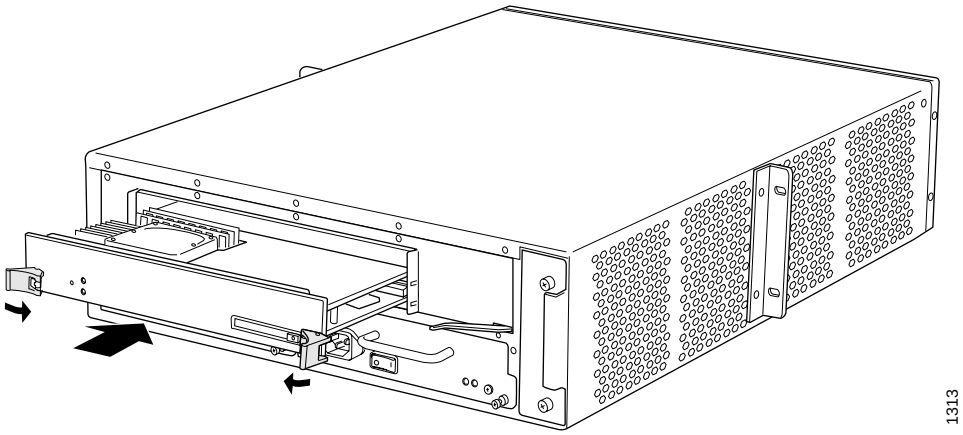
4. Flip the ends of the extractor clips toward the center of the router to seat the Routing Engine onto the FEB.

5. Using a screwdriver, tighten the screws on the outside edges of the extractor clips.

> **Caution** To seat the Routing Engine properly, be sure to tighten the screws adequately.

6. Press the rear cover into place over the FEB and the Routing Engine, and screw in the five screws to hold it in place.

Figure 47: Install the Routing Engine



Verify That the Routing Engine Is Installed Correctly

To verify that the Routing Engine has been installed correctly, check the status of the Routing Engine by entering the following command-line interface (CLI) command:

```
user@host> show chassis routing-engine
```

The router will not operate if the Routing Engine is not installed correctly. If the Routing Engine is not functioning normally, contact your customer service representative.

Modify the SDRAM Configuration

The design of the Routing Engine allows you to modify the SDRAM configuration by adding or removing DIMM memory modules from the Routing Engine board. The Routing Engine contains from one to three 168-pin DIMMs.

To modify the SDRAM configuration, use the following procedures:

Remove a DIMM Module on page 145

Install a DIMM Module on page 145

Caution

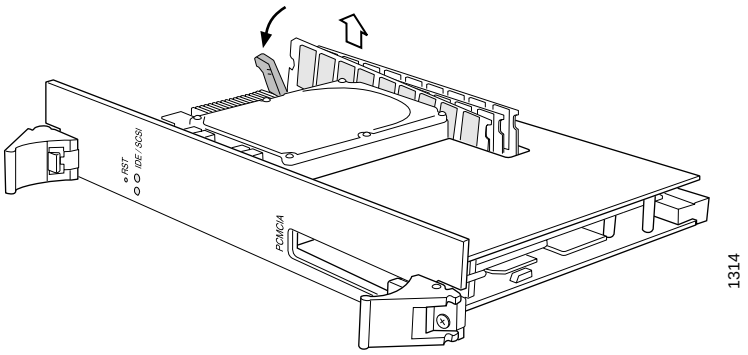
You must power down the router and remove the Routing Engine before removing or adding DIMM modules to the Routing Engine.

Remove a DIMM Module

The DIMM modules are located on the top of the Routing Engine. To remove a DIMM module, follow this procedure:

1. Attach an ESD wrist strap to your bare wrist and connect the wrist strap to one of the two ESD points on the chassis.
2. Power down the router as described in “Power Down the Router” on page 118.
3. Remove the Routing Engine as described in “Remove the Routing Engine” on page 142.
4. Press the plastic ejector on the side of the DIMM module you want to remove outward to free the module from the Routing Engine. The edge of the module raises upward.
5. Grasp the DIMM module by the raised edge, being careful not to touch any electrical components on the module, and firmly pull it out of the slot on the Routing Engine.
6. Immediately place the DIMM module in an electrostatic bag.
7. Press the ejector lever closed.

Figure 48: Remove a DIMM Module



Install a DIMM Module

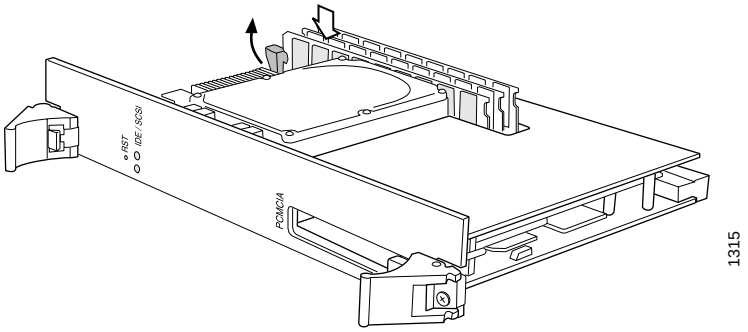
To install a DIMM module onto the Routing Engine, follow this procedure:

1. Attach an ESD wrist strap to your bare wrist and connect the wrist strap to one of the two ESD points on the chassis.
2. Remove the DIMM module from its electrostatic bag.
3. Press the ejector lever outward to open the empty DIMM slot.
4. Grasp the DIMM module by the edges, being careful not to touch any electrical components.

5. Pressing firmly on both ends, push the module into the slot until the ejector lever returns completely to the closed position.

6. Reinstall the Routing Engine as described in “Install the Routing Engine” on page 143.

Figure 49: Install a DIMM Module



Replace the PC Card

The slot labeled PC CARD on the Routing Engine faceplate accepts a Sandisk 110-MB PCMCIA card. The PC card is hot-removable and hot-insertable. The router is shipped with a PC card that contains JUNOS Internet software. You can also copy JUNOS software from the Routing Engine onto a card, for example to create a backup copy of upgrade software that you have obtained from Juniper Networks. Instructions for copying software to a card are available at the Juniper Networks Customer Support Center Web site (http://www.juniper.net/support); follow the link labeled “JUNOS Internet Software Download”.

The appearance and position of electronic components or the PC card slot on your Routing Engine might differ from the figures in this section. These differences do not affect Routing Engine functionality.

This section discusses topics related to replacing the PC card:

Remove the PC card on page 147

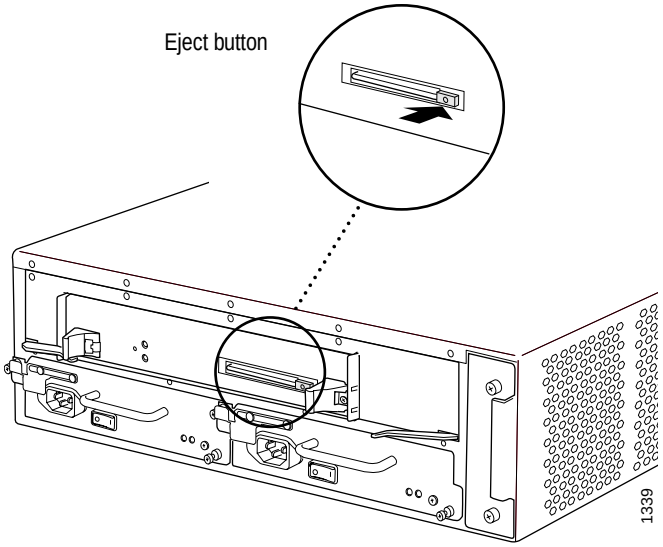
Insert the PC card on page 148

Remove the PC card

The PC card is loaded in the slot labeled PCMCIA on the back of the Routing Engine. To remove the PC card, follow this procedure:

1. Unscrew the five screws holding the rear cover in place, and remove the cover. Be sure to save the screws for when you reinstall the cover.
2. Locate the PC card slot on the front panel of the Routing Engine.
3. Press the eject button located to the right side of the PC card slot in the Routing Engine faceplate (see Figure 50). Note that the PC card slot might be located in a different position on your Routing Engine.
4. When the PC card pops partially out of the slot, grasp the card and pull it straight out the rest of the way.
5. If you are not replacing the PC card immediately, press the rear cover into place over the FEB and the Routing Engine, and screw in the five screws to hold it in place.

Figure 50: Remove the PC Card



Insert the PC card

To insert the PC card, follow this procedure:

1. If the rear cover is in place, unscrew the five screws holding the rear cover in place, and remove the cover. Be sure to save the screws for when you reinstall the cover.

2. Orient the PC card with the Juniper Networks logo facing in the direction specified on the Routing Engine faceplate. Insert the card into the slot.

3. Press the card firmly all the way into the slot (see Figure 51). Note that the PC card slot might be located in a different position on your Routing Engine.

4. Press the rear cover into place over the FEB and the Routing Engine, and screw in the five screws to hold it in place.

The JUNOS software on the PC card becomes the active version when the router reboots.

Figure 51: Insert the PC Card